State Coastal Conservancy

Wetland Monitoring & Assessment Guidance for Grantees

March 2020

Introduction

This guidance is intended to accompany the State Coastal Conservancy's (SCC's) grant agreement for construction projects that involve riparian or wetland restoration. The SCC is a member of the California Wetland Monitoring Group, and is implementing the State's Wetland and Riparian Areas Monitoring Plan (WRAMP) through its grant process. The goal of the WRAMP is to a consistent toolset for comprehensive monitoring and assessment of aquatic resources using a watershed or landscape context. This allows resource managers to produce regular reports on trends in riparian and wetland extent and condition and to relate these trends to management actions, climate change, and other natural and anthropogenic factors in ways that inform future policy and planning decisions. To support this goal, SCC is requiring that each riparian and wetland restoration project include: 1) site specific wetland monitoring plans that are compatible and consistent with the WRAMP framework and 2) standardized assessments of wetland restoration areas using a protocol called the California Rapid Assessment Method (CRAM).

CRAM is a standardized assessment of overall wetland condition based on visible indicators of physical and biotic structure, hydrology, and landscape setting. It is quick, repeatable, and assessed relative to a reference conditions within a watershed or region. Information about CRAM is found at www.cramwetlands.org. There are CRAM modules (survey protocols) for different wetland types (e.g., vernal pools, estuarine wetlands) that can be downloaded from the website. CRAM data can also be uploaded to cramwetlands.org so that restoration sites can be tracked over time and data from multiple sites can be aggregated. The information gathered through a CRAM assessment can help determine the ecological integrity of a site, its potential for restoration, and the need for additional management actions. These data are particularly useful for the type of management and project review done by SCC project managers. These data can, in addition to the project's full monitoring program, help project managers understand how quickly and how well the ecosystem of a restoration site is evolving overall. CRAM scores can be compared to reference wetlands across the state using Habitat Development Curves. The different Attribute Scores and the Stressor Checklist can also help project managers understand what functions are performing best or worst in a project, further explaining the overall CRAM Index score. Once enough data is collected on SCC projects, SCC management can perform assessments of how wetland projects are doing across regions to make critical funding decisions in the face of climate change—SCC's new NOAA Coastal Management fellow will be starting this analysis in 2021.

The CRAM assessment must be completed by a trained practitioner. A list of CRAM practitioners can be found at cramwetlands.org/training/participants. The cost for conducting CRAM varies depending on the site, but the costs for one assessment area (AA) is approximately $2,000 (see "Hiring a CRAM practitioner"). For many medium to small restoration projects, one AA is enough to cover a project site (see "Size and Number of AAs" below). Costs for CRAM assessments are eligible for funding through SCC on a discretionary basis. Projects that are very small in size or involve limited restoration actions (e.g.,

installing plants) may not be required to conduct CRAM assessments where there will likely be limited measureable change in site condition following project implementation (see "1b" below). Exceptions to the monitoring and CRAM requirements must be made in consultation with the SCC project manager.

In order to comply with SCC's grant requirements and complete the required assessments, grantees should take the follow steps:

1. Include the wetland monitoring plan and CRAM assessments in the Project Work Program – The Work Program will have a schedule, budget, and task descriptions for completing one pre- and one post-construction CRAM assessment and for uploading the data to cramwetlands.org. The Work Program should also include a task for developing a site specific wetland monitoring plan in conformance with the WRAMP framework. The wetland monitoring plan will have performance metrics that are specific to the restoration project.

   Conduct a Pre-construction CRAM Assessment (Baseline Condition Report) – A pre-construction CRAM assessment should be conducted within 12 months prior to the start of project construction. The exact timing should reflect the appropriate season to identify vegetation. For projects that are converting upland habitat to wetland habitat, it may be appropriate to do the first CRAM assessment immediately *following* construction since the pre-project site condition will not fit within the CRAM framework.

2. Conduct a Post-construction CRAM Assessment –A CRAM assessment should be done after project construction is complete and prior to the completion date of the grant agreement. The assessment should be timed to document a measurable degree of change in wetland condition. For example, if a site is going to be bare dirt right after construction, consider conducting the assessment when vegetation is expected to start recruiting at the site. If appropriate, the post-construction CRAM assessment can be done after the completion date of the grant agreement; however, a plan for completing it should be specified in the Work Program.

3. Publish Project Information – The grantee is responsible for ensuring the CRAM data is uploaded to cramwetlands.org. Only trained CRAM practitioners can upload CRAM data to the website. SCC project managers will download an eCRAM report as evidence that the project data has been uploaded. The reports will be reviewed to assess whether the methodology was correctly applied. In general, a site that was initially in a highly degraded state will not be expected to get a high post-construction CRAM score since it will take many years for site conditions to improve. The grantee will provide the site-specific monitoring data for the SCC project manager to upload into Project Tracker on EcoAtlas, an online database that is connected to cramwetlands.org.

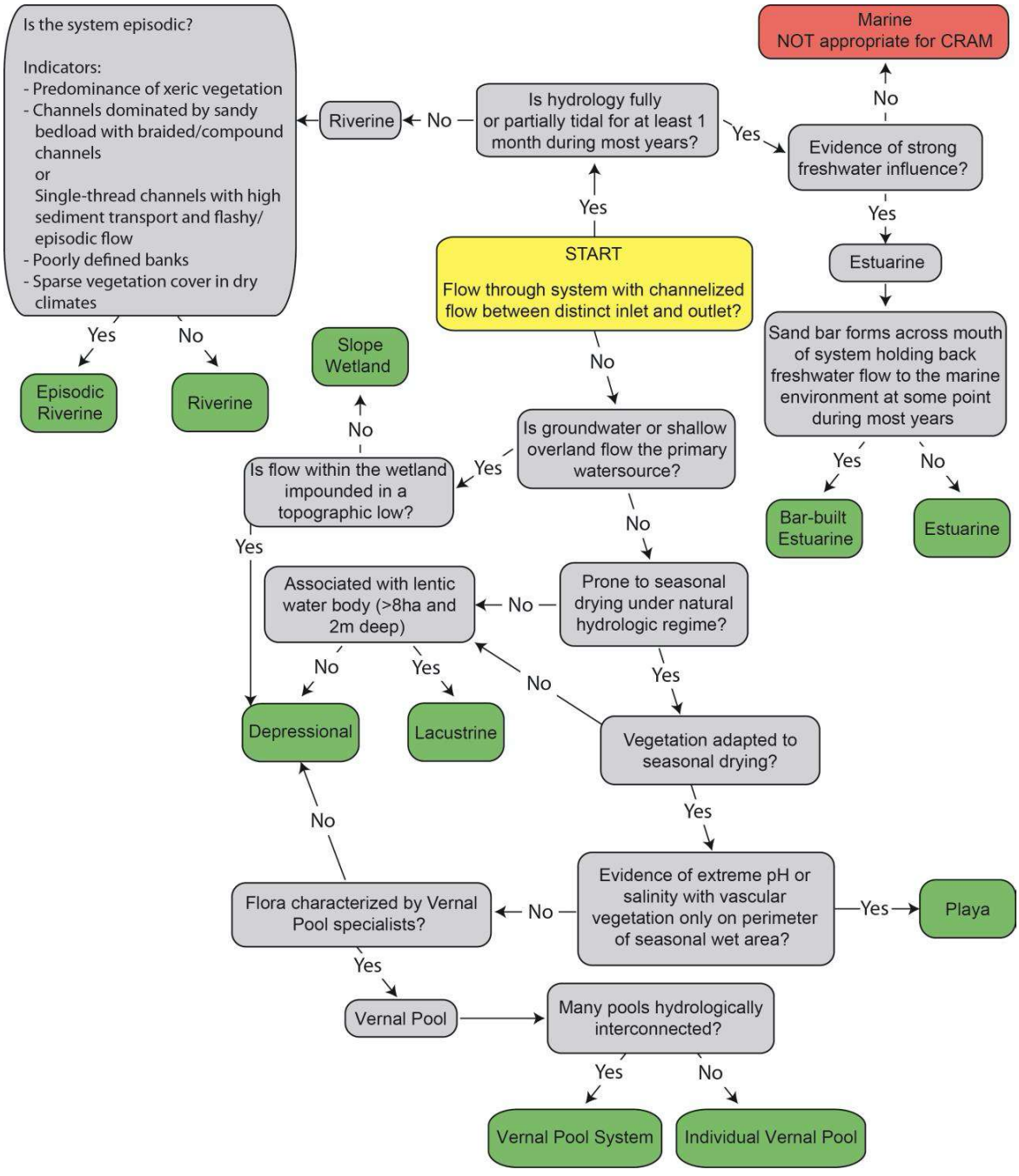
Additional Guidelines for SCC Project Managers:

1. Do you need to do CRAM?
   a. Most SCC wetland restoration implementation projects are required to do CRAM. CRAM Modules include: Estuarine - Perennial, Estuarine – Bar Built, Riverine, Riverine – Episodic, Riverine – Tidal, Depressional, Vernal Pool, Slope, Lacustrine, & Playa
   b. CRAM should not be used for a wetland that does not meet the minimize AA size. Recommended AA sizes are different for different wetland types (CRAM module). Not

all modules have a minimum size requirement. Those that do include 0.1 hectares (ha) for estuarine wetlands, 100 m long x 2 m wide for riverine wetlands, and lacustrine and playa wetlands have a minimum of 0.5 ha.

c. It is important to remember that most SCC wetland restoration projects have a more robust and detailed monitoring program included to answer specific research or management questions (often deemed as "Level-3" monitoring by the EPA). If you're project has a robust monitoring program, the researchers and consultants carrying out that plan will likely be able to conduct an additional CRAM assessment rather easily.

2. Hiring a CRAM practitioner
    a. CRAM requires a team of 2-3 trained practitioners typically less than 3 hours to complete
    b. A list of trained practitioners can be found on cramwetlands.org
    c. Hire a consultant team with familiarity with the region and wetland type, include a mix of experience levels (i.e. senior practitioners with junior practitioners) and those who can also carrying out the project's Level-3 monitoring program.
    d. Use the same team for both the pre-construction and post-construction CRAM assessments.
    e. The cost of a CRAM assessment depends on the size of the wetland. If only one AA is needed, the cost is typically ~$2,000. However, for larger projects more AAs may be needed (see Size of AAs below). If a larger project requires one or two additional AAs, the cost could reach approximately $6,000.
    f. A CRAM assessment should take ~1 day depending on the number of AAs that need to be done. The CRAM team should not do more than 3 AAs per day.
3. Scope for CRAM practitioners
    a. There are currently 10 different modules that can be used for a CRAM assessment depending on the wetland type. If you are not sure which type of wetland you project is occurring in, you can use the flow chart below and review the latest version of the CRAM User's Mannual, starting on page 20 (available here: https://www.cramwetlands.org/documents)
    b. For projects that are converting one wetland type to another wetland type, projects can use two different modules for the pre- and post-construction assessments—CRAM scores are comparable even if they are from different modules and can even help track type conversion progress (see CRAM Technical Bulletin V2, available here: https://www.cramwetlands.org/documents).



c. CRAM assessments must be completed in the appropriate growing season for the characteristic plant community of the wetland type. For non-tidal wetlands that is typically from March to September. Tidal wetlands have a longer growing season, but CRAM can be assessed in that same window from March to September. For seasonal wetlands, the growing season is typically March through June.
d. CRAM assessments should be conducted at low tide for estuarine wetlands and riverine wetlands should not be assessed during high flood events.
e. Size and number of AAs

i. Estuarine wetlands preferred AA size is ~1 hectare, slope wetlands preferred size is ~0.5 ha, depressional wetlands preferred size is ~1 ha, vernal pools do not have any size limitations, riverine wetlands preferred AA length is 10X average bankfull channel width, and lacustrine and playa wetlands have a preferred AA size of ~2 hectares.
ii. If the size of a wetland is within the size limits of the AA, then an entire wetland constitutes the AA and only one AA is needed. If the wetland is about twice as large as the preferred size of an AA, then two AAs is needed. If the wetland is at least three times bigger than the preferred size of the AA, then a third and final AA is needed. There are times when more AAs are needed for larger projects, but that's only if CRAM scores are significantly different (see page 31 of the CRAM User's Manual, available here: https://www.cramwetlands.org/documents)

4. Elements needed in a CRAM report, i.e. SCC deliverables
    a. Fully completed CRAM data sheet
    b. Completed stressor checklist
    c. Photographs of site illustrating key aspects of the wetland being assessed
    d. Map of AAs
    e. General site information (e.g. known presence of sensitive species, etc.)
    f. Timing of the assessment
    g. Names and contacts for the CRAM practitioners
5. Analyzing CRAM scores
    a. Wetlands in poor condition have CRAM scores that range from 25 to 50; fair condition scores range from 51 to 75; and good condition scores are greater than 75.
    b. The overall precision of CRAM has been estimated from studies at multiple wetland and stream types and based on these studies, there is 90% confidence that a CRAM score is statistically significantly greater than another if the sore is greater or more than 7 points different.
    c. CRAM scores can also help project managers assess if a wetland is evolving properly over time using Habitat Development Curves. If you are interested in this use, please see the CRAM Technical Bulletin Version 2 and your region's CRAM contact.